

**POROUS SILICA SUBSTRATES FOR POLYMER SYNTHESIS AND ASSAYS****ABSTRACT**

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Methods are provided for making and using thin films of porous silica substrates to synthesize arrays of polymers. Methods are also provided for assaying such polymers on porous silica substrates. The porous silica substrates offer an increase in array density and signal enhancement over conventional flat glass substrates. Examples of polymers that can be synthesized and assayed include biological polymers such as nucleic acids, polynucleotides, polypeptides, and polysaccharides. Arrays of nucleic acids or polynucleotides can be used for a variety of hybridization-based experiments such as nucleic acid sequence analysis, nucleic acid expression monitoring, nucleic acid mutation detection, speciation, effects of drug therapy on nucleic acid expression, among others.

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